Name: _____ Class: _____Due Date: _____

When solving the following problem, be sure to:

1) **Restate the <u>question</u>**
2) **State your <u>answer</u> in a complete sentence.**
3) **<u>List</u> facts and important information**
4) **<u>Explain</u> your solution strategy and include your <u>calculations</u>/work.**

Open and Shut Case

Corinna watched Eric struggle with an armful of books and notebooks as he tried to open his locker. Finally he dumped his books on the floor, took a slip of paper out of his pocket, and started turning the dial on his locker. As Corinna approached, he crumpled the paper and jammed it back in his pocket.

"Can I help?" Corinna asked.

Eric looked up and said, "I feel so dumb - I can't always remember my locker combination."
"Well, what I do," Corinna said, "is try to find some pattern in the numbers. For example, my locker combination last year was 24-32-40, or eight multiplied by three, four, and five."

"That's nice, but my three numbers are all two-digit numbers, and they don't have any common factors except for the number one," said Eric.

"Well, if you show me the numbers," Corinna answered, "I'll try to help you think of something."
Eric held out the piece of paper. He and Corinna were quiet for a few moments as they considered the numbers. Suddenly Eric shouted, "Perfect squares!"

"Yes," said Corinna, "these two numbers are perfect squares."

"But," said Eric, "they both have prime square roots, and that is why my numbers don't have any common factors."

"I've got it!" exclaimed Corinna. "The middle number is the sum of the square roots of the other two numbers."

Eric never forgot his combination again!

Can you find Eric's combination?

Bonus: Can you find all sets of numbers that could be Eric's combination?

Please answer the problem on a separate piece of paper. You must include all your calculations and an explanation of how you got your answer. Your paper will be scored in the following way:
- 4 The answer and the bonus are correct, you have included all your calculations, and the explanation is thorough and understandable.
- 3 The answer is correct, you have included all your calculations, and the explanation is complete and clear to the reader.
- 2 The answer is missing one of the items mentioned above.
- 1 The answer is incorrect, and the explanation or calculations are poor or missing.
- 0   Minimal or no effort was made to solve the problem.
- All late work is marked down a grade.